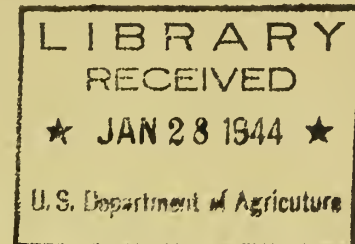


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WAR FOOD ADMINISTRATION
Food Distribution Administration

1944

MINIMUM TENTATIVE REQUIREMENTS

For

Facilities, Operating Procedures, and Sanitation

In

Egg Breaking and Egg Drying Plants

To be effective on dried eggs delivered after March 1, 1944

Washington 25, D. C. December 17, 1943

JAN 26 1944

THE UNIVERSITY OF CHICAGO

DEPARTMENT OF THE HISTORY OF ARTS

AND ARCHITECTURE

OFFICE OF THE DEAN

CHICAGO, ILL.

1911

Surfacing

*NOTE 2: Transite surfacing inside dryer shall have smooth seams.

REQUIREMENTS FOR FACILITIES, BUILDINGS AND PREMISES

A. Plant General

- I. General location of the plant should be in an area free from strong foul odors or excessively dust- and/or smoke-laden air due to abnormal industrial conditions. Strong foul odors include odors from chemical factories, livestock stables, dumping grounds, and other establishments producing strong odors which might be absorbed into the powder.
- II. Buildings and premises used for egg processing or storage shall be free from refuse, rubbish, or waste materials. Premises shall be free from conditions which constitute a source of insects, vermin, rodents or odors. Building shall be in good repair. All windows that may be opened and outside doors shall be screened. All doors leading to rooms where edible product is processed shall be provided with automatic closing devices.

B. Storage

- I. Shell egg storage on, or adjacent to the breaking premises shall be sufficient to pre-cool all shell eggs to meet the temperature requirement of 60 degrees F. or less for egg meat at time of breaking. When shell egg storage is not available on or adjacent to the premises, shell egg storage is to be provided at some other location and eggs shall be transported under conditions which will produce liquid egg meat not higher than 60 degrees F. at time of breaking.
- II. Freezing room shall be capable of freezing liquid egg thoroughly, preferably within 60 hours but not to exceed 72 hours, after packaging. Freezing room temperatures should be no higher than 5 degrees below zero Fahrenheit; however, freezing room temperatures may rise no higher than 15 degrees above zero Fahrenheit as long as the liquid eggs are frozen solid within the required time limit (72 hours). Liquid egg freezing room need not be on the premises; however, the rate of freeze requirement shall be the same (72 hours) whether the room is on or off the premises where breaking is done.
- III. Dried egg storage shall be capable of maintaining an atmospheric temperature of 50 degrees F. or less. Storage need not be on premises.
- IV. All storage rooms, including shell egg and frozen egg, shall be clean and free from objectionable foreign odors. Dried egg storage and supply rooms shall be dry.

C. Candling Room and Candling Room Facilities

Candling room shall be adequately darkened and equipped to enable candlers to detect and remove inedible eggs; shall be arranged so as to permit frequent removal of excess packing material; shall be equipped with clean and suitable containers to receive inedible and other non-suitable eggs. The candling room shall be ventilated in a satisfactory manner and be as free as possible from objectionable odors. The candling room floor shall be constructed in such a manner that it may be washed or scrubbed regularly.

D. Breaking Room and Facilities

- I. The breaking room shall be well lighted and be free from odors other than those evidenced by breaking edible eggs. Ventilation facilities shall provide for the prompt and continuous removal of foreign odors, and the intake of odorless air efficiently filtered with an approved type of filter. Wherever possible, air intakes shall be from outside the building.
- II. Ceilings and walls shall have tile, enamel, painted or other water resistant surface. Floors and their intersections with wall shall be impervious to water, and shall be provided with ample drainage, shall not have cracks or rough surfaces which form pockets for accumulation of water or dirt. Sewer drains shall be equipped with a trapping device which will prevent foul odors from permeating the breaking room.

Tables and receiving shelves shall be of metal or of wood covered with metal, or other approved materials. The metal surfacing shall be smooth without open seams.
- III. Strainers, or other clarifying devices shall be sufficient to remove meat spots, shell particles or any foreign material which may accidentally fall into the egg meat during breaking operations.

Minimum requirements for strainers: One strainer 20 mesh (U. S. Standards), either gravity type, pressure type, or Langson-kamp type, or a clarifier shall be used.

Recommendations in addition to minimum requirements: A pressure type or gravity type strainer with openings small enough to remove large shell particles or foreign material, and a pressure type or gravity type strainer 8 to 10 mesh.

- IV. Belt type shell egg conveyors in the breaking room constructed of material other than metal, shall be so constructed that they can be continuously washed and squeezed while in operation. Belt type metal shell egg conveyors shall be so constructed that they can be continuously washed while in operation. Overhead conveyors when used shall be installed so they do not pass directly over liquid.
- V. All liquid egg containers, including cups and buckets, shall be free from excessive dents, rust spots, and seams which make cleaning difficult. Leaking liquid egg buckets or shell egg buckets not be used.

- VI. Cooling facilities shall be provided to reduce liquid egg temperatures to 45° F. or below within 30 minutes after breaking and to maintain such temperatures until drying or freezing.

In the event that liquid egg cooling facilities cannot be provided, it will then be necessary to provide shell egg storage capable of reducing the temperature of the shell eggs, prior to breaking, to a point where liquid egg produced from such eggs will be at a temperature of 45° F. or less at the time of breaking. Such temperatures shall be maintained until drying or freezing.

Exception to egg temperature requirement:

In any case where liquid is held more than six hours, provision shall be made so that the egg meat temperature is reduced to 40° F. or below within 30 minutes after breaking and is maintained at 40° F. or below until drying or freezing.

Where liquid egg cooling facilities are not provided, storage vats or tanks shall be insulated.

All tanks, vats, drums, or cans for holding or used to transport liquid egg meat, shall be fitted with a tight cover. If equipped with gaskets they must be of sanitary type.

Inlets in vats shall be installed so as to prevent accumulation of foam from that source.

E. Washing and Sterilizing Room (Equipment and Utensils)

This room should be a separate room, ventilated with an exhaust fan, preferably exhausting the air to the outside of the building. A three-section tank or its equivalent shall be provided for washing, rinsing, and sterilizing purposes; however, a four-section tank is recommended, providing for rinsing utensils prior to washing.

An adequate supply of potable hot and cold water shall be provided.

Sanitary drainage racks capable of holding, without nesting, all breaking trays, racks, knives, cups and liquid egg pails shall be provided.

Test kits for testing strength of bactericidal solution shall be provided.

Separate facilities shall be provided for washing and sterilizing shell egg pails and leaker trays.

F. Drying Room and Driers

- I. Driers shall be equipped with approved air intake filters, intake and outlet thermometers, and be so constructed as to enable thorough cleaning. Air shall be drawn from sources free from foul odors or excessive dust and dirt.

- a. The drier shall be so constructed as to permit the continuous removal of egg powder.
- b. Cooling equipment shall be provided so that powder will be cooled to 85° F. or less (except a tolerance of 3° F. will be permitted) when packed, or within one hour after being removed from drier.
- c. Dried egg sifter screens shall be no coarser than the size permitted for No. 16 mesh (U.S. Standards).
- d. Indirect heat or the use of an approved premixing device, or other approved device for securing complete combustion shall be required.

G. Personnel Facilities

Personnel facilities, including toilets, lavatories (lockers), and dressing rooms must be adequate and meet state requirements for food processing plants. Dressing rooms and toilet rooms shall not open directly into any rooms where liquid egg or dried egg powder is exposed or stored. Separate ventilation shall be provided for toilet rooms. Lavatories shall be provided with hot water and shall be connected to drains.

REQUIREMENTS FOR OPERATIONS AND SANITATION

A. General Plant Operations

- I. Premises shall be free from refuse, rubbish, waste material and other materials not needed for immediate operation, and any conditions, such as puddles of water, filthy refuse containers which may constitute a source of odors or a harbor for insects and rodents. If the breaking room is adjacent to, or part of a produce house or similar establishment, all trash, manure and filth shall be removed from such produce house establishment daily. All trash containers shall be washed daily.
- II. Buildings shall be kept free from refuse, rubbish, waste material and other materials not needed for immediate operations, and any condition which may constitute a source of odors, such as puddles of water, dirty refuse containers and the like. Doors and windows which are opened frequently shall be kept screened during the fly season.
- III. All odds and ends and seasonal tools and equipment which are not currently used shall not be allowed to remain in the rooms where edible products are processed or stored.
- IV. Doors leading from rooms where edible product is stored or processed shall be kept closed.
- V. Windows in breaking or packing room shall be kept closed or provided with approved filters.

B. Refrigerating Shell and Liquid Egg

- I. Liquid held for drying shall be held in containers which are covered at all times, unless the vats are located in a separate vat room under approved conditions. Agitators on liquid egg holding vats shall not be operated in a manner which will produce foam. If ice is used as an emergency refrigerant, it must be certified by local or state board of health.
- II. When facilities are available to cool the liquid to 45° F. or less within 30 minutes after breaking, shell eggs shall be pre-cooled to a temperature to produce egg liquid at time of breaking of 60° F. or less. When no facilities are available to lower egg liquid temperatures rapidly, shell eggs shall be pre-cooled to a temperature which will produce egg liquid at time of breaking of 45° F. or less. The temperature of the liquid shall be maintained at this temperature until drying or freezing. (See exception III.)
- III. Exception to egg temperature requirement:
In any case where liquid egg is held more than six hours, the temperature of the egg mass shall be 40° F. or less within 30 minutes after breaking and maintained at 40° F. or less until drying or freezing.
- IV. Compliance with temperature requirements applying to shell or liquid egg shall be considered as satisfactory only if all portions (units in the case of shell eggs) of the given product meet the temperature requirements.
- V. Shell and liquid egg storage room shall be kept clean and free from foreign odors.

C. Liquid Freezing Rooms

- I. Temperatures shall be maintained to produce freezing at a rate which will prevent the formation of "slow freeze" odors. Freezing room temperatures shall be maintained no higher than 15° above zero Fahrenheit, provided that a solid freeze is obtained, preferably in 60 hours not more than 72. Therefore, freezers shall not be overloaded so as to cause the temperature to rise above 15° F. above zero at any time. Packages shall be stacked so as to permit circulation around each individual container. Packages shall not be stacked directly on the floor but on slats of not less than 1 inch in thickness.
- II. Freezing room shall be kept in clean condition and free from foreign odors. The outside of liquid egg containers shall be clean and free from evidence of liquid egg. Any substandard frozen eggs (not meeting FSCC or Armed Forces Standards) shall be stored in a specifically designated and segregated section of the storage room, and each package shall be marked or identified properly.

D. Dried Egg Storage

Dried egg storage space shall be maintained at a temperature of 50° F. or less, and shall be kept dry, clean, and free from foreign odors. Powder shall be placed under refrigeration at or below 50° F. within 24 hours after manufacture, either in a warehouse or in a refrigerated car or truck. Any under grade powder or powder failing to meet FSCC specifications shall be stored in a specifically designated and segregated section of the storage room. Such powder shall be plainly marked and properly identified.

E. Candling Room

- I. Candling rooms shall be kept reasonably free from cobwebs, dust, excess packing material and objectionable odors. Entire rooms (walls, benches, and equipment) should be sprayed with a bactericidal solution to prevent mold growth. Egg candling room floors shall be washed or scrubbed daily.
- II. Each individual egg shall be candled in a manner approved by an authorized representative of Food Distribution Administration and be classified as follows:
 - a. All loss or inedible, including black rots, white rots, green or bloody whites, mixed rots, crusted yolks, moldy eggs, large blood and meat spots, blood rings, developed embryos at or beyond the blood ring stage, and any other eggs which are filthy or decomposed shall be placed in a separate container and denatured. Care should be used not to break the inedible eggs while in the candling room so as to prevent odors. The inedible eggs shall be removed from the building regularly throughout the day.
 - b. All dirty sound shelled eggs with loosely adhering dirt shall be placed in separate containers after candling, and such eggs shall be washed, rinsed, then sprayed with or immersed in bactericidal solution, and shall dried prior to breaking. Eggs shall not be washed in breaking, sterilizing or candling rooms or any room where edible product is processed. Wash water shall be warmer than egg temperature. Washed eggs shall be broken promptly after drying.
 - c. Leakers, resulting from the candling operation, and badly dented checks which are apt to be smashed in the shell egg containers, shall be placed into trays (not more than 36 eggs per tray) and be transferred promptly to the breaking room to be broken out by specially trained personnel.
 - d. Leakers found and removed from cases in the candling room and dirty checks may be broken but the liquid produced therefrom shall not be incorporated in the liquid to be dried.

- e. Duck, turkey, guinea, and goose eggs shall not be broken for drying purposes.
- f. Shell eggs received in cases having strong odors such as kerosene, gasoline, or other odors of a volatile character shall be candled and broken separately to determine their acceptability for egg meat purposes.
- g. All other edible eggs shall be carefully placed on conveyors or in buckets in a manner which will prevent unnecessary breakage and shall be transferred promptly to breaking room. Eggs shall be handled in a manner to minimize sweating prior to breaking.

F. Breaking Room

- I. All breaking room personnel must thoroughly wash their hands with odorless soap and water each time they enter the breaking room. Breakers shall take a complete set of clean cups, knives, racks and trays when starting work and after recess and lunch periods and after breaking an inedible egg.
- II. Shell egg containers coming into the breaking room shall be so handled that they do not pass directly over or come in contact with liquid egg, liquid egg containers or drip trays. Belt type shell egg conveyors shall be continuously cleaned, and if other than metal, continuously squeezed. Shell egg containers shall be washed whenever dirty. All shell egg containers shall be washed at least twice each 8-hour shift and shall be drained before re-using.
- III. Not more than three eggs shall be broken into one cup; if cups are small not more than two eggs shall be broken into each cup. Cups shall not be filled to overflowing.
- IV. Each cup of egg meat shall be carefully examined for appearance and odor before emptying, and the contents of any cup containing one or more inedible and/or less egg shall be rejected and placed in an identified container. Inedible and less eggs are defined to include black rots, white rots, green whites, mixed rots, crusted yolks, moldy eggs, bloody whites and large blood and meat spots, blood rings developed at or beyond the blood ring stage, sour or musty eggs and any other filthy decomposed or putrid eggs. Whenever an inedible egg is broken, the drip tray, rack, cups and knife shall be replaced with clean equipment except that only the cup need be exchanged when blood spots, bloody whites, or blood rings are encountered.
- V. Cups containing questionable eggs shall be re-examined by especially trained personnel for final acceptance or rejection. All inedible egg liquid must be placed in a clearly identified container containing a denaturant. This container shall be kept near or in the washing and sterilizing room.
- VI. Breakers shall wash their hands after breaking an inedible egg, and prior to receiving new equipment.

- VII. Shell particles and other foreign material accidentally falling into the cup shall be removed with the use of a clean spoon. Breakers shall keep their fingers out of cups at all times. Paper towels or tissues shall be used at breaking tables, cloth towels shall not be permitted. Paper towels should not be re-used.
- VIII. Contents of drip trays shall be emptied into the cup and smelled before pouring into liquid egg bucket. Drip trays shall be emptied at least once for every 15 dozen eggs broken. Egg breakers should be trained to reduce drip to the minimum.
- Any liquid in shell egg buckets must be discarded as inedible.
- All buckets of liquid egg meat shall be re-examined by a second person for odor prior to emptying into receiving tank.
- All liquid egg containers must be kept off the floor at all times. Egg white or albumen recovered through the use of Irish Suckers shall not be incorporated with the liquid to be dried.
- IX. Liquid egg meat buckets shall be washed and sterilized in rotation at least 4 times each 8-hour shift. Equipment such as churns, mills, settling tanks, shall be cleaned at least twice each 8-hour shift. All pipe lines, pumps, surface coolers and like equipment shall be washed and sterilized at the end of each shift. Equipment shall not be reassembled until within two hours prior to using. Breaking room floor shall be kept as dry as practically possible during breaking operations.
- X. The entire breaking room shall be thoroughly cleaned at the end of each shift. All equipment shall be dismantled and sterilized. Floor shall be scrubbed with washing compound solution and squeegeed.
- XI. A positive pressure of odorless filtered air shall be maintained in the breaking room during operations and exhaust shall provide for the prompt and continuous removal of foreign odors. Breaking room shall be kept free from flies and dust.
- XII. Leakers and chocks (as defined on page 7, section E, paragraph C) shall be broken in one end of the room, preferably near the washing and sterilizing room. All leaker trays shall be washed before returning to candling room. Whenever leakers or unwashed dirties are broken for producing substandard liquid, they shall be broken on a separate table. If substandard egg meat is produced, it must be properly identified by the firm.

G. Sterilizing Procedures

- I. Cups, knives, trays and liquid egg pails, shall be washed in warm water containing washing compound, rinsed in cool or lukewarm clear water and sterilized in a bactericidal solution. A hypochlorite or other approved bactericidal solution; minimum original strength 100 p.p.m. of available chlorine or equivalent shall be used into which utensils shall be immersed for not less than one minute prior to placing into use. This solution shall be changed whenever the strength drops to 50 p.p.m. of available chlorine or its equivalent.

Test kits should be used to determine strength of bactericidal solution. The sterilized utensils shall be drained by stacking bottoms up on a drain rack. This equipment shall not be nested. The person detailed to rinse or flush dirty utensils shall not handle sterilized equipment until he has washed his hands. If steam or steam cabinet is used as the sterilizing agent, equipment shall be washed and rinsed as above and held in a steam cabinet for not less than 30 minutes at 212° F.

- II. Strainers shall be washed with water under pressure, and then washed, rinsed and sterilized in the same manner as the cups.
- III. Shell egg pails and locker trays shall be drained, washed in running water and should be dipped in a bactericidal solution as required for cups. This equipment shall not be nested on storage or drain racks unless washed inside and outside. Separate facilities for this operation shall be provided. These utensils shall be reasonably dry before re-using.
- IV. Receiving tanks and churns shall be rinsed with water during lunch hours, and at the end of each shift shall be scrubbed with washing compound solution, rinsed, and flushed with sterilizing solution. If steam is available they should be steamed to speed drying after a 15-minute waiting period. Vats and tanks in the breaking room shall be kept covered as much as possible.
- V. Pumps and sanitary piping shall be rinsed, dismantled, washed with a washing compound solution and rinsed as soon as possible after each shift. Equipment shall not be reassembled more than two hours prior to renewing operations. All breaking room equipment when reassembled for use shall be flushed with a sterilizing solution (100 p.p.m. available chlorine or equivalent) for not less than one minute just prior to placing in use.
- VI. Tables shall be washed and scrubbed at the end of each shift and should be sprayed or wiped with a sterilizing solution.
- VII. Floor shall be washed, scrubbed and squeegeed, at the end of each shift, and flushed and squeegeed during lunch recess. Floors shall be kept clean and reasonably dry during breaking operations and free of egg meat and shells.

Shell conveyers and shell containers shall be washed and scrubbed daily.
- VIII. Metal Frozen Egg Containers shall be washed and sterilized prior to filling. Drums, cans, and tank trucks used to hold or transport liquid eggs for drying shall be sterilized just prior to use.
- IX. Liquid Holding Vats shall be thoroughly rinsed with cool water under pressure, scrubbed with washing compound solution, rinsed and flushed with bactericidal solution (100 p.p.m. minimum available chlorine or equivalent) before each use. Vats shall be kept covered at all times when containing egg liquid unless located in an approved vat holding room.

H. Defrosting Frozen Eggs

- I. Frozen eggs shall be turned into a liquid state as quickly as possible after the defrosting process has begun. Frozen eggs may be tempered or partially defrosted not to exceed 48 hours at room temperatures not higher than 40° F., or not to exceed 24 hours at room temperature above 40° F. The frozen egg should be removed from the container as soon as practicable but in no case shall the removal of the contents of containers be delayed longer than the time limits set forth above. Paper or fibre frozen egg packages shall not be immersed in water to be defrosted.
- II. All liquid egg meats resulting from defrosting frozen eggs shall be held at 45° F. or below provided that, if such liquid is held longer than six hours the temperature shall be 40° F. or less until time of drying.
- III. Sanitary methods shall be used in handling containers, extracting semi-frozen egg, or in removing the last few ounces of liquid egg from containers. A rubber squeegee may be used to remove the last few ounces of liquid egg from the container. Person assigned to remove last few ounces of egg liquid from containers when so engaged may not be assigned other work to be done at the same time. Other methods for removing the final few ounces of liquid egg from containers must be approved by authorized representatives of the Food Distribution Administration. The pouring of water from one container to another to rinse out the containers should not be permitted, and if this practice is followed such liquid shall not be incorporated in the liquid egg to be dried. Emptied cans shall not be stacked one on the other while waiting the final cleansing of liquid egg.
- IV. Each container of frozen eggs shall be checked for condition and odor just prior to being emptied into the crusher or receiving tank. Frozen eggs which have questionable or off odors, (sour, musty, fruity, or decomposed odors) shall not be incorporated into the liquid to be dried.
- V. Crushers and other equipment shall be dismantled at the end of each shift and shall be rinsed, washed in washing solution, rinsed, and flushed with a sterilizing solution. Floors and work tables must be kept clean.

I. Drying Room Operation

- I. The drying room shall be kept in a dust free, clean condition at all times and free of flies, insects, and rodents.
- II. Secondary powder shall be blended continuously with primary powder and shall not be held more than one hour prior to blending. All powder shall be cooled to 85° F. or below (except a tolerance of 3° F. will be permitted) at the time it comes from the sifter to be packaged, or within one hour after being removed from the drier.
- III. All powder shall be sifted through a No. 16 mesh screen (U.S. Standard) and such screens shall be replaced whenever torn. Accumulations of large particles or lumps of dried eggs shall be removed from sifter screens at hourly intervals.

- IV. Bags from bag collectors shall be dry cleaned not less than once each month.

J. Drying Room Sanitation

- I. Sanitary pipes and pumps shall be dismantled, cleaned and sterilized at the end of each day's drying in the same manner as similar breaking room equipment.
- II. High pressure lines (with nozzles removed) and pumps (homogenizer and viscolizers) shall be flushed after each day's run until apparently clean, brushed with washing compound solution, and flushed with cool water. Within two hours prior to resuming operations equipment shall be reassembled and flushed with bactericidal solution (100 p.p.m. available chlorine or its equivalent) for not less than one minute. Drier should be started on water each day prior to drying liquid egg.
- III. Spray nozzles, orifices, cores or whizzers shall be washed and sterilized in a bactericidal solution (100 p.p.m. available chlorine or equivalent) in the same manner as described for cups on page 9, Section G, paragraph I.
- IV. Drying units should be brushed down thoroughly daily, and both washed and rinsed at least once per week. The following procedure is suggested:

Daily: Brush down the system with a light bristle brush. Good quality non-shedding brushes should be used.

Weekly: After thoroughly brushing system down, all drying units except those which have Flexiboard or composition interiors should be washed with warm water containing an ample amount of any suitable cleanser or washing compound. Flush and rinse system thoroughly with cold water. To sterilize, spray with bactericidal solution (100 p.p.m. available chlorine or its equivalent) or heat at 250-300° F. for approximately 1/2 hour.

E. Definition of Product

- I. Primary powder is that powder which is continuously removed from primary or main drying chamber while the drying unit is in operation.
- II. Secondary powder is that powder which is continuously removed from the secondary ^{chamber} and/or bag collectors while the drying unit is in operation.
- III. Sweep-down powder is the powder which is recovered in the clean-up process from the primary or secondary chamber, bag collector, conveyors, dust house or any other part of the drying unit. Sweep-down powder may not be blended with powder for delivery to Government Agencies.

- IV. Dust-house powder is that powder which is recovered in any room, chamber, or any other device just prior to exhausting the dryer air to the outside atmosphere. Dust-house powder may not be blended with powder for delivery to Governmental Agencies.

L. Personnel Health

- I. No person afflicted with any infectious, contagious, or communicable disease, or who is a carrier of such disease, shall be permitted to come into contact with eggs in any form or with any equipment used to process such eggs.
- II. Each plant employee (including resident samplers and breaking room supervisors) should have a thorough medical examination not less than once each year. New employees should not work more than one week without medical examination. These requirements shall not excuse failure to comply with applicable State laws.
- III. All workers coming in contact with dried or liquid eggs, containers, or equipment, shall wear clean garments.
- IV. All plant personnel shall wash their hands before beginning work, and upon returning to work after leaving the workroom.
- V. Perfumes, nail polish and highly scented soap shall not be used by breakers. Hair nets or caps shall be worn by all employed in the breaking and packaging rooms at all times during operations. Use of tobacco in any form while on duty, by workers coming in contact with egg products, shall not be permitted.
- VI. Expectoration or other unsanitary practices shall not be permitted and should be reported to the management immediately.

